

In the Claims:

Cancel claim 53 and amend claim 52 as follows:

B₂ 52. (AMENDED) A method for wiping an inner surface of a tubular member comprising providing in the tubular member a plug having two conical wipers one of which overlaps the other in an axial direction, the wipers engaging the inner surface in a manner so that each wiper is deflected into a substantially cylindrical shape in engagement with the inner surface; and applying pressure from one end of the tubular member to move the plug within the tubular member.

Amend claim 54 as follows:

B₃ 54. (AMENDED) The method of claim 52 wherein the wiper closest to the one end of the tubular member is overlapped by the other wiper.

Amend claim 55 as follows:

55. (AMENDED) The method of claim 52 wherein as the wiper closest to the one end of the tubular member wears, the pressure will be applied to the other wiper.

Amend claim 57 as follows:

B₄ 57. (AMENDED) The method of claim 52 further comprising:
providing an additional plug in the tubular member having two axially-spaced, conical wipers thereon, wherein each wiper on the additional plug engages the inner surface in a manner so that the wiper is deflected into a substantially cylindrical shape in engagement with the inner surface; and
applying pressure from one end of the tubular member to move the additional plug within the tubular member.

Cancel and rewrite claim 58 in independent form as follows:

B5 114. A method for wiping an inner surface of a tubular member comprising:
providing in the tubular member a plug having two axially-spaced, conical wipers that engage the inner surface in a manner so that each wiper is deflected into a substantially cylindrical shape in engagement with the inner surface;
applying pressure from one end of the tubular member to move the plug within the tubular member;
providing an additional plug in the tubular member that is identical to the first-mentioned plug, the additional plug having two axially-spaced, conical wipers that engage the inner surface in a manner so that the wiper is deflected into a substantially cylindrical shape in engagement with the inner surface; and
applying pressure from one end of the tubular member to move the additional plug within the tubular member.

Cancel and rewrite claim 59 in independent form as follows:

115. A method for wiping an inner surface of a tubular member comprising:
providing in the tubular member a plug having conical wipers one of which overlaps the other in an axial direction, the wipers engaging the inner surface in a manner so that each wiper is deflected into a substantially cylindrical shape in engagement with the inner surface;
applying pressure from one end of the tubular member to move the plug within the tubular member;
providing an additional plug in the tubular member having two conical wipers one of which engages the other in an axial direction, the wipers engaging the inner surface in a manner so that the wipers are deflected into a substantially cylindrical shape in engagement with the inner surface; and
applying pressure from one end of the tubular member to move the additional plug within the tubular member.

Amend claim 60 as follows:

B6 ~~60. (AMENDED) The method of claim 115 wherein the wiper closest to the one end of the tubular member is overlapped by the other wiper on each plug.~~

Cancel and rewrite claim 61 in independent form as follows:

B7 116. A method for wiping an inner surface of a tubular member comprising:
providing in the tubular member a plug having two axially-spaced, conical wipers that engage the inner surface in a manner so that each wiper is deflected into a substantially cylindrical shape in engagement with the inner surface;
applying pressure from one end of the tubular member to move the plug within the tubular member;
providing an additional plug in the tubular member having two axially-spaced, conical wipers that engage the inner surface in a manner so that the wiper is deflected into a substantially cylindrical shape in engagement with the inner surface;
applying pressure from one end of the tubular member to move the additional plug within the tubular member; and
providing a shearable insert across a central opening in the plug closest to the end of the tubular member for closure thereof, the insert being adapted for shearing and opening the central opening in the latter plug when a predetermined pressure is applied across the shearable insert, and further comprising providing a substantially non-shearable insert across a central opening in the other plug for substantially permanent closure of the opening in the second plug.

Cancel claim 63 and amend claim 62 as follows:

B7 62. (AMENDED) A method for wiping an inner surface of a tubular member comprising:
introducing a first plug into one end of the tubular member;
introducing a fluid into the one end of the tubular member to force the first plug downwardly in the tubular member to displace the fluid from the tubular member;

providing at least two wipers on the first plug, one of the wipers overlapping the other wiper in an axial direction so that, as the plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein each wiper of the first plug is sized to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface;

terminating the step of introducing the fluid into the tubular member;

introducing a second plug into the tubular member end;

forcing the second plug downwardly through the tubular member so that it forces the fluid and the first plug downwardly in the tubular member;

establishing a differential pressure across the first plug to open the first plug and allow the fluid to pass through the first plug and exit the other end of the tubular member; and

providing at least two wipers on the second plug one of which overlaps the other in an axial direction, so that as the second plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein each wiper of the second plug is sized to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface.

Amend claim 64 as follows:

64. (AMENDED) The method of claim 62 wherein the wiper of each plug closest to the one end of the tubular member is overlapped by the other wiper of the same plug.

Cancel and rewrite claim 65 in independent form as follows:

117. A method for wiping a tubular member containing fluid comprising:
introducing a first plug into one end of the tubular member;
introducing fluid into the one end of the tubular member to force the first plug downwardly in the tubular member to displace the fluid from the tubular member;

providing at least two axially spaced wipers on the first plug so that, as the plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein each wiper of the first plug is sized to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface;

terminating the step of introducing the fluid into the tubular member;

introducing a second plug into the tubular member end which is identical to the first plug;

forcing the second plug downwardly through the tubular member so that it forces the fluid and the first plug downwardly in the tubular member;

establishing a differential pressure across the first plug to open the first plug and allow the fluid to pass through the first plug and exit the other end of the tubular member; and

providing at least two axially spaced wipers on the second plug so that as the second plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein each wiper of the second plug is sized to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface.

Cancel and rewrite claim 66 in independent form as follows:

118. A method for wiping a tubular member containing fluid in a well comprising:

introducing a first plug into one end of the tubular member;

introducing fluid into the one end of the tubular member to force the first plug downwardly in the tubular member to displace the fluid from the tubular member; providing at least two axially spaced wipers on the first plug so that, as the plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein each wiper of the first plug is sized to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface;

terminating the step of introducing the fluid into the tubular member;
introducing a second plug into the tubular member end;
forcing the second plug downwardly through the tubular member so that it forces the fluid and the first plug downwardly in the tubular member;
establishing a differential pressure across the first plug to open the first plug and allow the fluid to pass through the first plug and exit the other end of the tubular member;
providing at least two axially spaced wipers on the second plug so that as the second plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein each wiper of the second plug is sized to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface; and
providing a shearable insert across a central opening in the first plug for closure thereof and adapted for shearing and opening the central opening in the first plug when a predetermined pressure is applied across the shearable insert, and further comprising providing a substantially non-shearable insert across a central opening in the second plug for substantially permanent closure of the opening in the second plug.

Amend claims 67-69 as follows:

67. (AMENDED) The method of claim 62 wherein the second plug is forced downwardly in the tubular member introducing a fluid into the tubular member.

68. (AMENDED) The method of claim 62 wherein the second plug forces the fluid from the tubular member into an annulus formed between the tubular member and the well.

69. (AMENDED) The method of claim 62 further comprising providing a float shoe in the tubular member which stops the downward movement of the first plug and causes the differential pressure.

Cancel claims 70-79.

Cancel claim 81 and amend claim 80 as follows:

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80. (AMENDED) A method for wiping an inner surface of a tubular member comprising:

- introducing a first plug into one end of the tubular member;
- introducing a fluid into the one end of the tubular member to apply pressure to the first plug to force it downwardly in the tubular member to displace the fluid from the tubular member;
- providing at least two wipers on the first plug, one of the wipers overlapping the other in an axial direction so that, as the first plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, and so that, as a wiper on the first plug closest to the one end of the tubular member wears, the pressure will be applied to the other wiper of the same plug;
- terminating the step of introducing the fluid into the tubular member;
- introducing a second plug into the tubular member end;
- applying pressure to the second plug to force it downwardly through the tubular member so that it forces the fluid and the first plug downwardly in the tubular member;
- establishing a differential pressure across the first plug to open the first plug and allow the fluid to pass through the first plug and exit the other end of the tubular member; and
- providing at least two wipers on the second plug, one the wipers overlapping the other in an axial direction so that, as the second plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein as a wiper on the second plug closest to the one end of the tubular member wears, the pressure will be applied to the other wiper of the same plug.

Amend claim 82 as follows:

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82. (AMENDED) The method of claim 80 wherein the wiper of each plug closest to the one end of the tubular member is overlapped by the other wiper of the same plug.

Cancel and rewrite claim 83 in independent form as follows:

B14 119. A method for wiping a tubular member containing fluid comprising:
introducing a first plug into one end of the tubular member;
introducing fluid into the one end of the tubular member to apply pressure to the first plug to force it downwardly in the tubular member to displace the fluid from the tubular member;
providing at least two axially spaced wipers on the first plug so that, as the first plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein as a wiper on the first plug closest to the one end of the tubular member wears, the pressure will be applied to the other wiper of the same plug;
terminating the step of introducing the fluid into the tubular member;
introducing a second plug into the tubular member end;
applying pressure to the second plug to force it downwardly through the tubular member so that it forces the fluid and the first plug downwardly in the tubular member;
establishing a differential pressure across the first plug to open the first plug and allow the fluid to pass through the first plug and exit the other end of the tubular member;
providing at least two axially spaced wipers on the second plug so that, as the second plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein as a wiper on the second plug closest to the one end of the tubular member wears, the pressure will be applied to the other wiper of the same plug; and
sizing each wiper to engage the inner surface in a manner so that it is deflected into a substantially cylindrical wiping engagement with the inner surface.

Cancel and rewrite claim 85 in independent form as follows:

B15 120. A method for wiping a tubular member containing fluid in a well comprising:
introducing a first plug into one end of the tubular member;

introducing fluid into the one end of the tubular member to apply pressure to the first plug to force it downwardly in the tubular member to displace the fluid from the tubular member;

B15 providing at least two axially spaced wipers on the first plug so that, as the first plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein as a wiper on the first plug closest to the one end of the tubular member wears, the pressure will be applied to the other wiper of the same plug;

terminating the step of introducing the fluid into the tubular member;

introducing a second plug into the tubular member end;

applying pressure to the second plug to force it downwardly through the tubular member so that it forces the fluid and the first plug downwardly in the tubular member;

establishing a differential pressure across the first plug to open the first plug and allow the fluid to pass through the first plug and exit the other end of the tubular member;

providing at least two axially spaced wipers on the second plug so that, as the second plug passes downwardly in the tubular member, it wipes the inner surface of the tubular member of any accumulated fluid, wherein as a wiper on the second plug closest to the one end of the tubular member wears, the pressure will be applied to the other wiper of the same plug; and

providing a shearable insert across a central opening in the first plug for closure thereof and adapted for shearing and opening the central opening in the first plug when a predetermined pressure is applied across the shearable insert, and further comprising providing a substantially non-shearable insert across a central opening in the second plug for substantially permanent closure of the opening in the second plug.

Amend claim 86 as follows:

B16 86. (AMENDED) The method of claim 80 wherein the step of applying pressure to the second plug comprises introducing a fluid into the tubular member.

Amend claim 87 as follows:

87. (AMENDED) The method of claim 80 wherein the second plug forces the fluid from the tubular member into an annulus formed between the tubular member and the well.

Amend claim 88 as follows:

88. (AMENDED) The method of claim 80 further comprising providing a float shoe in the tubular member which stops the downward movement of the first plug and causes the differential pressure.

Cancel claim 113 and amend claim 109 as follows:

109. (AMENDED) A device for wiping an inner surface of a tubular member comprising:

a plug having a longitudinal axis;

a first wiper extending radially outwardly from the plug at an acute angle with respect to the longitudinal axis of the plug;

a second wiper extending radially outwardly from the plug at an acute angle with respect to the longitudinal axis of the plug and in an axially spaced relation to the first wiper so that when the plug is inserted in one end of the tubular member and pressure is applied to the plug to force it downwardly through the tubular member, the wiper portions wipe the inner surface of the tubular member; wherein, as the wiper closest to the one end of the tubular member wears, the pressure will be applied to the other wiper; and

an insert disposed across a central opening in the plug for closure thereof, wherein said insert is a shearable member adapted for shearing and opening the central opening when a predetermined pressure is applied across the shearable member or a substantially non-shearable member adapted for substantially permanent closure of the central opening.

Amend claim 110 as follows:

110. (AMENDED) The device of claim 109 wherein the plug comprises a body member having an elastomeric jacket disposed therearound and wherein the first and second wipers are integrally formed with the jacket.

P17 Amend claim 111 as follows:

111. (AMENDED) The device of claim 109 wherein the jacket comprises a cylindrical portion surrounding the body member and is integrally formed with the wipers.

Amend claim 112 as follows:

112. (AMENDED) The device of claim 109 wherein the body member is cylindrical and wherein the jacket has a through bore for receiving the body member.

Add the following new claims:

P18 -- 121. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and
at least one wiper cup extending outwardly around the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the axial length of the wiper cup is greater than the diameter of the body member.

122. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and
at least one wiper cup extending outwardly around the body member and defining a radial width and a substantially linear wiping surface that wipes the inner surface of the tubular member, wherein the axial length of the wiping surface is greater than the maximum radial width of the wiper cup.

123. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and

at least one wiper cup extending outwardly around the body member, wherein the wiper cup defines an annular space around the body member and has a substantially linear wiping surface for wiping the inner surface of the tubular member, and wherein the axial length of the wiping surface is greater than the maximum radial width of the space.

BP 124. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and

at least one wiper cup extending outwardly around the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the wiper cup defines an annular space around the body member, and wherein the axial length of the space is greater than the maximum radial width thereof.

125. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and

at least one wiper cup extending outwardly around the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the wiper cup defines an annular space around the body member, and wherein the axial length of the space is greater than two times the maximum radial width thereof.

126. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and

at least one wiper cup extending outwardly around the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the wiper cup defines an annular space around the body member, and wherein the axial length of the wiper cup is greater than the maximum radial width of the space.

127. The plug of claim 126 wherein the axial length of the wiper cup is approximately 2.5 times greater than the maximum radial width of the space.

128. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member; and
at least one wiper cup extending outwardly around the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the wiper cup defines an annular space around the body member, and wherein the axial length of the space is greater than one-half the diameter of the body member.

129. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member;
a lip extending outwardly from the body member and defining a wiping surface for wiping the inner surface of the tubular member; and
at least one wiper cup extending outwardly around the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the length of the wiping surface of the wiper cup is greater than the length of the wiping surface of the lip.

130. The plug of claim 129 wherein the axial length of the wiping surface of the wiper cup is up to approximately five times greater than the axial wiping surface of the lip.

131. A plug for wiping an inner surface of a tubular member, the plug comprising:
a body member;
a lip extending outwardly from the body member and defining a wiping surface for wiping the inner surface of the tubular member; and
at least one wiper cup extending outwardly from the body member and defining a wiping surface for wiping the inner surface of the tubular member, wherein the axial length of the wiping surface of the wiper cup is greater than the maximum radial width of the lip.

132. The plug according to claim 121, 122, 123, 124, 125, 126, 128, 129 or 131 wherein the plug has a central opening.

133. The plug of claim 121, 122, 123, 124, 125, 126, 128, 129 or 131 wherein each wiper is deflected into a substantially cylindrical shape in engagement with the inner surface.

134. The plug of claim 121, 122, 123, 124, 125, 126, 128, 129 or 131 wherein each wiper extends radially outwardly from the body member at an acute angle with respect to the longitudinal axis of the body member.

B/D 135. The plug of claim 121, 122, 123, 124, 125, 126, 128, 129 or 131 further comprising a jacket disposed around the body member and wherein the first and second wipers are integrally formed with the jacket.

136. The plug of claim 121, 122, 123, 124, 125, 126, 128, 129 or 131 further comprising an insert disposed across a central opening in the body member for closure thereof, wherein said insert is a shearable member adapted for shearing and opening the central opening when a predetermined pressure is applied across the shearable member or a substantially non-shearable member adapted for substantially permanent closure of the central opening.

137. The plug of claim 121, 122, 123, 124, 125, 126, 128, 129 or 131 wherein there are at least two axially spaced wipers extending from the body member.

138. The plug of claim 137 wherein one of the wipers overlaps the other wiper in an axial direction so that the outer surfaces of the wiper portions together extend continuously along the longitudinal axis of the body member before the plug is inserted in the tubular member.

139. A method of wiping comprising the steps of:
introducing fluid into a tubular member; and

moving a plug in the tubular member to move the fluid wherein the plug is constructed in accordance with claims 121, 122, 123, 124, 125, 126, 128, 129 or 131.

140. A method of wiping fluid from a tubular member comprising the steps of:
providing a plug having a body member, and a wiper cup defining a wiping surface for wiping an inner surface of the tubular member, wherein:

(a) the axial length of the wiper cup is greater than the diameter of the body member,

(b) the axial length of the wiping surface is greater than the maximum radial width of the wiper cup,

(c) the wiper cup defines an annular space around the body member and has a substantially linear wiping surface for wiping the inner surface of the tubular member, the axial length of the wiping surface being greater than the maximum radial width of the space,

(d) the wiper cup defines an annular space around the body member, the axial length of the space being greater than the maximum radial width thereof,

(e) the wiper cup defines an annular space around the body member, the axial length of the space being greater than two times the maximum radial width thereof,

(f) the wiper cup defines an annular space around the body member, the axial length of the wiper cup being greater than the maximum radial width of the space, or

(g) the wiper cup defines an annular space around the body member, the axial length of the space being greater than one-half the diameter of the body member; and
moving the plug in the tubular member to wipe the fluid. - -

141. A method of wiping fluid from a tubular member comprising the steps of:
introducing fluid into a tubular member;

providing a plug having a body member, a lip and a wiper cup defining a wiping surface for wiping an inner surface of the tubular member, wherein:

(a) the length of the wiping surface of the wiper cup is greater than the length of the wiping surface of the lip, or